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ABSTRACT

This presentation identifies one of four kinds of evaluation--impact evaluation--existing today for career education programs. Impact evaluation provides four essential sets of information: (1) all data necessary to determine if a program should be continued; (2) a determination of which alternative program achieves the greatest gains at a given cost; (3) information on the components of each program and the component mixes which are most effective in a given expenditure to achieve maximum operating efficiency; and (4) data from the above three for persons with different characteristics so a decision-maker can determine which individuals are best served by each program. (NH)

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IMPACT EVALUATION OF CAREER EDUCATION PROGRAMS*

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IMPACT EVALUATION OF CAREER EDUCATION PROGRAMS

Abstract

The main thrust of career education programs which have received a top priority in the U.S. Office of Education, is to prepare all students for a successful life work by increasing their alternatives for occupational choice, by eliminating barriers to attaining job skill, and by enhancing learning achievement in all subject areas at all levels of education. The need of effective evaluation of career education programs is acute when large public or private resources are involved. This paper identifies one of the four kinds of evaluation existing today, impact evaluation of career education programs which should provide at least four essential sets of information. First, they should provide all of the data necessary to determine if a particular program should be continued. Second, they should determine which of the alternative programs achieves the greatest gains for a given cost. Third, evaluation should present information on the components of each program and mixes of components which are most effective for a given expenditure so that maximum operating efficiency can be achieved. Finally, evaluations should provide the first three types of information for persons with different characteristics so that a decision maker may determine which individuals are best served by each program.

IMPACT EVALUATION OF CAREER EDUCATION PROGRAMS

A fundamental purpose of education is to prepare students to be a productive member of society. So far, our school systems do not perform their function properly. Too many youths leave schools without having developed marketable skills, the ability to make reasonable career choices, or the capacity to attain maximum personal fulfillment from their lives.

Indeed, careful analysis of the structure and function of our present school system compels one to seriously entertain the idea that it is impossible for the school system to accomplish what needs to be done. The present system simply is not built to do the job. Efforts continue in many places to reform and revise the present educational system. Many efforts have met with some degree of success; most offer only piecemeal remedies.

What is required, in essence, is a total educational system reform which would strive to provide each student with a means to select and pursue a life's path which would maximize his aspirations and abilities. The student would have the opportunity to develop the kinds of knowledge, understanding, and skills needed to live in a work-oriented society. Such a model of education can be considered Career Education.

Impact Evaluation of Career Education Programs, page twoCareer Education

Under the career education concept, in addition to learning how to read, write, and compute, the career education student in the elementary grades, 1 through 6, studies history, languages, and the physical and social sciences. (See Chart 1 for an example of a Career Education model). Simultaneously, he explores the world of work through a wide spectrum of occupational "clusters."

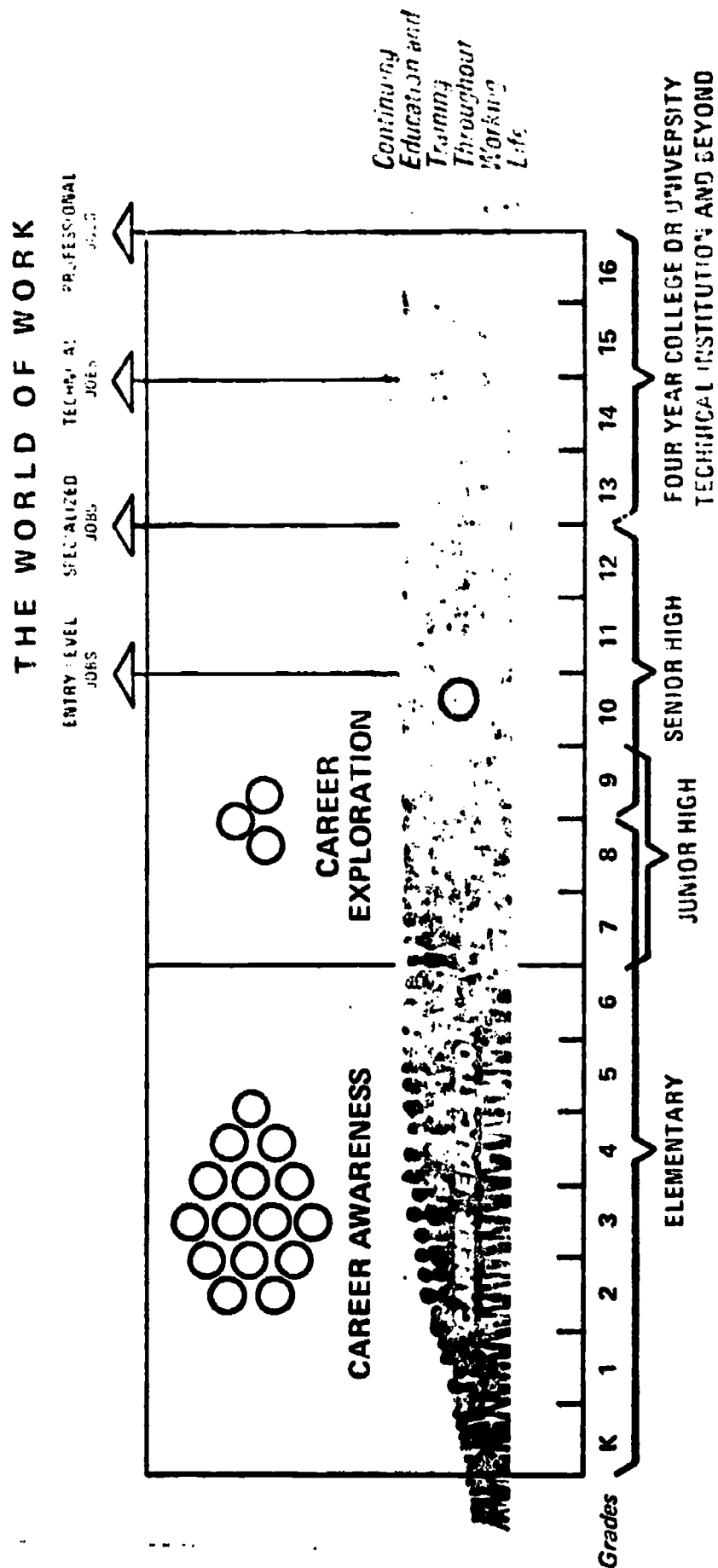
In the middle grades, 7 through 9, the student examines more closely those clusters in which he is most interested. By the end of the 10th grade he develops elementary job entry skills which he can pursue if he does not complete the 12th grade. If he does complete the 12th grade, the student is prepared to enter the world of work or to continue his education at a postsecondary institution -- college, technical institute, or other choice -- suitable to his needs, interests, and abilities.

All students have the opportunity to enjoy work during their school years. This is accomplished through cooperative arrangements with school, employer, community and government agencies. Extensive guidance and counseling activities assist the student to discover and develop his particular interests and abilities and match them against potential careers.

CHART I

A SOLUTION...

An Example of a **CAREER EDUCATION** Model



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(Adapted from Marland, 1972, p 5)

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As an experimental alternative to traditional elementary and secondary education, career education has been conceptualized in three separate forms: career education based in the schools, career education based in business and industry, and career education based in the home. The school-based career education idea revolves around the schools' providing a greater emphasis than at present on the students' development of occupational skills in the course of his high school education. Employer-based career education involves business, industry, and public and private agencies in preparing youth at the secondary level to seek immediate employment on one hand, and to continue education to eventual employment on the other hand. The home-based career education concept involves the use of various media, primarily television, to introduce vocational development concepts into the home.

Need for Effective Evaluation

The need for effective evaluation is nowhere more acute than in the field of Career Education Programs where large amounts of public and private resources are involved and when the goals of the programs may be far-reaching. 2.5 million students leave the formal education system each year without adequate preparation for a career. (Marland 1972). To the extent that career education programs have been inefficient or ineffective, not only are

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dollars wasted, but the students do not achieve their full potential.

Past evaluations of educational programs have taken a variety of forms. Three basic types of evaluation can be identified. The first type of evaluation is input evaluation. In conducting an input evaluation, an attempt is made to determine the relevance of the project to the needs of students, community, employers and government. The second type of evaluation is process evaluation. The purpose of process evaluation is to monitor the project operating efficiency. Project monitoring begins with a basic program plan which describes how a particular career education program should be administered. This plan should include such items as the qualifications of the program staff, the administrative hierarchy which should be present, the reporting forms which should be used, and the list of services which should be performed. Project monitoring then will determine if the plan is being followed and to what extent procedures and practices may be modified to follow more closely the plan of operating efficiency. The third type of evaluation is output evaluation. The output evaluation seeks to determine to what extent the stated short-run objectives have been accomplished. This type of evaluation arises out of the need by program administration for immediate information on the success

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or failure of a particular program. The criteria of program success include such objectives as the learning of new skills, the placement record of the project immediately following its completion and the improvement in earning of the program participants as compared with their earnings before the program. Most of the evaluators of socially oriented programs carried on in the past have been these three types of evaluations.

Impact Evaluation

The fourth type of evaluation is impact evaluation or outcome evaluation. The impact evaluation examines the long-run objective of career education programs and views success and failures in these terms. The major purpose of this type of evaluation is to provide policy makers on a government or other funding agency level with basic data necessary for them to make decisions wisely. Impact evaluation of career education programs should provide at least four essential sets of information. First, they should provide all of the data necessary to determine if a particular career program should be continued. Second, they should determine which of the alternative programs achieve the greatest gains for a given cost. Third, evaluations should present information on the components of each program and the mixes of components which are most effective for a given expenditure so

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that maximum operating efficiency can be achieved. Fourth, evaluations should provide the above three types of information for students with different characteristics, so that a decision-maker may determine which individuals are best served by each program.

There are four parties who may benefit from career education programs. These are students in the program, society as a whole, employers, and government. Each of these groups has different outcomes which they wish the career program to accomplish. Therefore, the goals of career education programs will differ. For the student, the goals are more limited and are usually those which directly affect him, such as receiving a high school diploma, getting a job, attending a technical school or a four-year college. From society's point of view, the goals of career education programs are increased aggregate production, improved equity in the overall distribution of income and employment, and reduction in the national unemployment rate. An employer will tend to look at the programs in terms of his interest. For instance, he will be concerned about how the productivity of his labor forces has been increased. Finally, the government will view the program in terms of the various social goals and, in addition, will seek programs which will help its party stay in power and aid its budgetary position.

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Obviously, there is a great deal of overlap among the goals of the four groups. The government acts as the agent of society in operating the programs. As such, definitions of program success will naturally coincide in most areas for the government and for society. Similarly, students and employers as members of society are interested in aggregate changes as well as those directly affecting them. Likewise, the effect of programs on students will determine in part their success in terms of society. Increased employment of students in programs is likely to improve aggregate employment, and improvement in the production of individual firms may lead to increased aggregate production.

There may also be an overlap between the goals for each of the parties. For instance, the reduction in an individual's unemployment may increase his earnings as well as decrease his feeling of dependency. Since the effects, however, may have independent importance for the individual, we believe that all should be considered.

There also may be conflicts, however, between the goals of the different parties and between various goals for a particular party. Thus, we may find that a program which improves the income of the participants is very costly to the

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government because a program which is highly efficient at increasing aggregate production leads to greater inequity in the national distribution of income. These conflicts in possible program achievement raise the problem of ranking the goals of each of the parties. On a theoretical level the evaluator should recognize that the rewards and costs of career education programs to particular interested parties who have political influence may play an important role in determining the size, scope, and even the existence of the program. He must then take account of the goals of all four parties.

Furthermore, it is necessary for the career education program evaluator to present data on many program goals so that the different parties will have the data necessary for them to evaluate the program. Ideally, the users of career education program evaluations should specify those goals which they believe to be the most important. The evaluator and decision-makers would consult each other to ensure that the evaluation measured the most meaningful goals. In addition, the relative ranking of the goals may change over time. Thus we suggest that the evaluator examine as many goals as he can in his study.

To facilitate the choice of goals to be studied, we present a list of goals for students, society, the individual employers,

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and the government. We feel that all career education programs can be judged to a large extent in terms of these goals. We realize, however, that each program will have a different method of reaching these goals and will put somewhat different emphasis on each of the goals. The list is, of course, not all-inclusive. It should, however, provide many of the most important goals of career education programs. Below each goal we present specific operational criteria to measure the success of a career education program in meeting the goals.

This list does not assign priorities to specific goals. It is believed that assignment of priorities is the ultimate responsibility of the decision-maker. For each of the possible decision-makers two types of goals have been presented. The first group includes goals where operational criteria exist and are presently being used for evaluation purposes. The second set of goals are included with the hope that further development of operational measures will be stimulated.

I. Career education program for students**A. Objective with clear evaluation criteria**

1. Received a job
2. Admitted to a four-year or two-year college
3. Admitted to a technical school for further technical training

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4. Received a high school diploma

B. Objective more difficult to measure

1. Increased satisfaction with school work
2. Increased satisfaction with social status
3. Improved self-concept
4. Increased personal income

II. Career education program for society

A. Objectives with clear evaluation criteria

1. Reduced crime
2. Reduced unemployment
3. Improved equality in distribution of income and employment, especially for target group

B. Objectives more difficult to measure

1. Increased social satisfaction
2. Increased voluntary leisure
3. Improved family life
4. Stable consumer price
5. Improve race relations

III. Career Education Program for employers

A. Objectives with clear evaluation criteria

1. Job of specific employer filled
2. Job in particular area filled

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3. Increased sales

B. Objectives more difficult to measure

1. Increased job satisfaction

2. Improved profits

3. Increased production

4. Improved employer-employee relations

IV. Career Education Program for government

A. Objectives with clear evaluation criteria

1. Increased registration for a given political party

2. Reduced welfare receipts

3. Reduced unemployment insurance

4. Reduced cost of government operations

5. Increased tax revenues through an increased tax base

B. Objectives more difficult to measure

1. Improved national health

2. Increased voluntary leisure

3. Improved housing conditions

4. Increased national production

Measuring Program Success

Because benefits of career education programs may be received by individuals, by society, by employers, and by the

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government, and because each has somewhat different goals, or criteria of success, separate calculations of program benefits are required for each of these groups on the basis of the benefits as defined for that group. The methodology for each calculation will be approximately the same for all of the groups, however. Each group seeks to determine the differences which exist in a set of measures, with and without the career education programs. This will require a comparison between the experience, behavior, and attitudes of program participants after participating in the program and those expected if they had not participated.

To conduct an evaluation of a career education program it is necessary to measure the relationships between the program goals (the dependent variables) and a variety of independent variables including the personal characteristics of participants, the program components, and the conditions under which the programs operate. It will be the job of the evaluation to discover which of these independent variables are important and the nature of the relationship. However, most dependent variables with which evaluations of career education programs deal are functions of more than one independent variable. Under these circumstances the analyses would treat simultaneously all of the independent variables which are believed to be relevant. To omit some variables in the analysis may lead to distorted conclusions due to

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correlation or interaction among these variables and these independent variables which are included in the analysis. Therefore, multivariate techniques should be used in the evaluations to discover and test the statistical significance of any relationship which are observed. ✓

The use of simple cross tabulations to isolate such relationships will be inadequate in most cases. For instance, the effects of race, age, education, and skill level on earnings are all interrelated. Yet each of the effects should be distinguished. To cross tabulate by all of these variables would involve so many cells that the sample would have to be enormous. In addition, the tables would be so large as to be unmanageable. Multiple regression and correlation techniques, on the other hand, require a much smaller sample size and permit easy interpretation of the findings.

The costs of a career education program most properly should be considered to be the program's opportunity cost -- the value of the alternative benefits which are foregone because of the program. Resources which are devoted to the career education program cannot be used to produce other goods and services. For instance, society by devoting manpower to conduct training programs loses the services of those persons as teachers in vocational high schools, as stock brokers, or even as automobile workers, to

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use a few examples. Another alternative is that these persons would be unemployed, in which case, society gives up nothing in lost production by putting them to work. Similarly, the government gives up alternative programs or tax cuts and employers give up plant improvements or dividends when they spend funds for career education programs. Finally, individuals may lose earnings while they participate in the program.

The costs of career education programs can be viewed from several different perspectives, just as were their benefits. As explained above, students, society, employers, and government may each be required to give up resources for use in the programs. In some cases expenditures of resources will mean lost opportunities for more than one group. For example, salaries of government administrators will be costs for society as well as for government. There will also be expenditures, however, which will be costs for one group but will be gains for other groups. For example, government allowance payments to program participants or reimbursements paid to employers will be costs for the government but will actually reduce the costs of the participants and the firms involved. Therefore, we once again present separate lists for each group.

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I. Cost for Students

1. The cost which students would not need if they do not participate in the program. These include such costs as: transportation to and from the program, meals and living costs away from home, uniforms, books, tools or other educational materials and day care for dependents.

2. Loss of earnings due to participation in the program.

3. Reduced government payments due to participation in the program. This includes training allowance, subsistence allowance, travel allowance or unemployment insurance payments.

II. Cost for Society

1. The cost of all personnel involved in the program. This includes local project personnel at the state level and at the national level.

2. The physical capital used in the program. This includes:

(a) The market rental value of all property and building including government property.

(b) The market rental value of all equipment and materials used in the program.

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3. Miscellaneous services necessary to operate the program; such as staff travel, telephone service and equipment repair.

4. The potential production of persons participating in the program which is lost during the time the program is being conducted.

III. Cost for Employers

1. The wage costs of employees who perform services minus any funds received from the government to reimburse the firm.

2. The value of all physical capital used up in the program which is owned by the firm and for which it does not receive reimbursement from the government.

3. Miscellaneous expenditures by the firm on services necessary for program operations which are not reimbursed by the government.

4. The production lost because of poor quality of work which results as a part of the learning process for the participants. From this cost any reductions in taxes as a result of lower profits and any reimbursement from the government should be subtracted.

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IV. Cost for Government

1. The personnel costs of all personnel involved in the program for whom the government pays the salaries or reimburses local sponsors.
2. The value of all physical capital used in the program which is government owned, rented by government, or for which a local sponsor is reimbursed.
3. The expenditures on miscellaneous services which are made by government or for which payment is reimbursed by government.
4. The net increase in government payments to individuals which are made to induce them to participate in the programs.
5. The tax revenues which are lost during the program. These would include the reductions in the personal income taxes, social security taxes and unemployment insurance taxes which may result from lower earnings, and the reductions in sales and excise taxes caused by lower expenditures of the participants while they are in the program. In addition, lower corporate profits taxes might result from decreased efficiency of participants involved in on-the-job programs.
6. The other items for which government makes payments to local sponsors. These would include payments to firms conducting on-the-job training to compensate for the lower productivity of trainees.

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Measuring the Cost of Career Education Programs

To measure the costs of a program requires the comparison of the opportunity cost or the expenditure of resources on behalf of the program participants by themselves, by society, by employers or by government, with those which would have occurred were there no program. We should note again that while we desire to measure the effects of adding or subtracting participants from the program, we usually are unable to do this. Instead we measure the average costs for a program and must assume that the program with higher average costs will have a higher cost for adding a new participant.

As was the case with measurements of program success, the best way to measure what would have happened to the program participants is to use a control group which is randomly selected from persons willing and able to enter the program. Again, only this group will give an unbiased estimate. Thus if costs are to be accurately estimated, the same type of control group must be used to measure them as is used to measure program success. If projects are selected for evaluation when funded, this will permit the same control groups to be used to measure the costs and success of a program.

1. THE USE OF CONTROL GROUPS. Control groups should be used to provide information for three types of cost estimates. The first is the losses incurred while the participants are in the career education program (the opportunity costs). While participation in the program, individuals usually are not engaged in what they normally would be doing. Therefore, participation in the program may lead to losses of after tax earnings, unemployment compensation, or welfare payments by the individuals, production by society, and taxes by government. The experience of the control group during the course, however, should not be affected by the program. Therefore, the difference between their after tax earnings, unemployment compensation, welfare payments, production and taxes, and those of the program participants will show the losses actually incurred because of participation in the program.

The second use of control groups is to determine how much of the governmental services received by the participants would not have been received if there were no program. Earlier we discussed employment service job referral services which are normally used by many of the persons who enter career education programs. Similarly, when welfare recipients enter career education programs the counseling they receive in the program may merely replace counseling they would have received from a case worker.

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Therefore it is important that information be collected on the amount and nature of all governmental services received by both the participants and the control group. If this is known, the latter can be subtracted from the former to find the actual increment in services which result from a program. Then only the cost of this increment in services should be compared with the benefits which were calculated as the differences between the two groups.

Finally, the control group can be used to measure the increment in program-related expenditures by the participants. Some programs require the participants to incur expenses for travel, instructional materials, uniforms, living expenses and meals away from home, etc. Some of these expenditures represent added costs of program participation. Others, however, may not. For example, if an individual would be taking the bus to work instead of taking it to a career education center were he not in a career education program, there may be no additional cost of transportation resulting from the program. To arrive at this conclusion, however, it is necessary to know the expenditures associated with the course by the participants and the expenditures on these items by the control group.

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2. THE USE OF MULTIVARIATE ANALYSIS. In our discussion of the measurement of program success we indicated that multivariate analysis should be used to determine how the personal characteristics, the program characteristics, and other factors affected each of the goals. The same procedures should be used to examine costs. Only if this is done will it be possible to relate differing program success which results from changing the nature of the program with the costs for making these changes. For example, if the job development component is found to be twice as effective as the counseling component, one must also know the relative costs of the two sets of components before any changes are introduced. Thus the costs for society, participants, employers, and government should each be analyzed using the same independent variables as we discussed in the section on benefits.

The multivariate analysis of costs, however, can be conducted on two levels. The first is to examine total costs of projects. Each project examined in the study is an observation and total project cost, total project cost per enrolled participants (students), total project cost per graduate participant, or total project cost per hour of student participation can be the dependent variables. Such an analysis could tell the effect on total costs of

changing the characteristics mix of the participants or of changing the components which make up the program. This is the type of average cost information which is usually desired. If, however, it was useful to know the effect of such changes on the costs of particular components of the program then the dependent variable would have to be only the cost of that component, the cost of the component per enrolled participant or graduate participant or the cost of the component per hour of participation.

Another approach would be to treat each participant in the program as the unit of observation. This type of analysis is analogous to that used to measure program success and could also provide more detailed information because there would be a greater number of observations. It is, however, much more difficult to conduct.

The data required, though, would be the same as those which we felt necessary to estimate the effect of changes in program components. Each individual participant would need a form on which would be entered all services performed in the program for the individual, the time spent in providing these services and the identity of the person who provides them. The costs of the services would then be computed by multiplying the hourly rate of each person providing services by the amount of time provided. To this would be added a figure representing some apportionment of the administrative costs, the costs of

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capital facilities, and the cost of miscellaneous services. The apportionment might be based on the length of time the participant was in the program. Finally, the individual's additional expenditures and opportunity costs of being in the program would be added. These individual costs would be the dependent variable with the same independent variables as discussed earlier.

Conclusion

The data gathered for evaluation of career education programs should provide the information to make four types of decisions: (1) whether a particular existing program should be continued, (2) which of several alternative existing programs should be expanded or contracted, (3) in what ways can changes in the components of a particular program lead to improved efficiency, and (4) for particular groups of individuals, what programs serve them best?

Although the data discussed above could answer these questions, a criteria of combining the measures of program success and cost may be important to a decision-maker evaluating a program. In detail:

SHOULD A PROGRAM BE CONTINUED? The answer to this question usually depends on what alternative programs are

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available. General agreement, however, should exist on the discontinuation of certain types of programs. A program should be discontinued when no redeeming features are found after consideration of all criteria of success, that is, where all important dependent variables are measured and: (1) no benefit-cost ratio is greater than one, and (2) no cost-effectiveness ratio has a positive numerator or a negative denominator.

These criteria will very seldom be met if only because it will usually be impossible to quantify all of the dependent variables. Therefore, the program decisions must be based on comparisons of alternative programs.

COMPARISON OF ALTERNATIVE PROGRAMS. In a very few cases one program will be superior to another program when compared on all of the criteria we have suggested. In these cases the course of action is clear: the superior program should be expanded. (This is based on the assumption, discussed earlier, that average benefits and costs are positively related to those at the margin). In most cases, however, one program will be superior in some areas but inferior in others. The choice of program expansion and contraction under these circumstances depends on the preferences attached to each of the goals. For

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example, a skill training program may be more effective than a career orientation program in raising the earnings and reducing the unemployment of the participants. The career orientation course, however, may lead to greater personal satisfaction and improvement in future career decisions. In this situation, assuming that only one program can be expanded, a choice must be made as to which is more important, increased earnings and employment or behavioral improvements. Once explicit weights showing relative importance are assigned to each of these goals, the program decisions can be made. The weights should be explicit so that others who have different values can also use the analysis.

As we discussed earlier, there are two strategies which may be followed in assigning relative weights to program goals. The first is for the decision-maker to provide the evaluator with the weights of various goals before the evaluation is begun. The evaluator will then examine only those measures of success with non-zero weights and will aggregate his findings to arrive at a single overall measure of program effectiveness. The advantage of this approach is that it does not consider what are thought to be irrelevant goals, that is, those given no weight by the decision-maker, and so is more economical and efficient. Its major shortcoming is that the weights assigned to goals differ

among decision makers and over time. For this reason the alternative approach usually is more practical.

The second strategy proposes that the evaluator should calculate the benefit-cost or cost-effectiveness ratio for every goal which might be relevant for each program being examined. If consideration of all possible goals is not possible because of cost or other limitations, then the calculations should be made at least for all goals which are thought might be highly relevant. The ratios for alternative programs can then be compared in a single table. This procedure allows each decision-maker to assign the weights he believes are most appropriate and to arrive at a decision of overall program value. If circumstances change, the decision-maker can redefine the weights he wishes to use and simply recalculate the relative performance of the programs. The weights should be determined independently of the analysis results, however. Otherwise there is a great post-analysis temptation to find the weights which will make the analytical results conform to previous prejudices.

COMPARISONS OF PROGRAM COMPONENTS AND OF THE DIFFERENT GROUPS OF PARTICIPANTS. The same procedures could be used to compare the successes and costs of the components of a particular program. The multivariate analysis proposed includes the effects of the presence, the duration,

and the quality of program components on each of the measures of success and cost.

Possibly, there may be a component which has no benefit-cost ratio greater than one and no positive cost-effectiveness ratio for all possible criteria. Such a component probably should be dropped. In some cases, however, components have to be treated as sets. For example, diagnostic testing by itself will make no improvement in the individual's behavior. Without it, however, useful career counseling may be extremely difficult. More likely, however, components will vary in their effectiveness depending on the criterion of success. Once more, a tabular listing for each component can be made of the benefit-cost or cost-effectiveness ratio for each of the criterion to facilitate the choice between components.

Finally, the same method of analysis and presentation could not be used to identify the effects of different programs and components on different types of participants. The multivariate analysis would show whether programs or components produce differential success or costs depending on the types of participants. From these data benefit-cost and cost-effectiveness ratios for a particular group of participants could be calculated for all programs and components. Once more, the weighting of tabularly presented values will allow cross-program and cross-component comparisons.

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